

CLAIMS:

1. A lighting device comprising at least one light source arranged in a housing, in which the housing comprises a light guide on at least one side, which light guide includes an input element facing towards the light source, which during operation of the lighting device functions to receive light radiated from the light source, as well as an output element facing away from the light source, which during operation of the lighting device functions to emit a light beam being passed through the light guide, and in which the housing further comprises a diffuse light reflector for the diffuse reflection of light radiated from the light source into the direction of the input element during operation of the lighting device, characterized in that the input element of the light guide is configured as a collimator so as to enable a light beam to be coupled into the light guide within a restricted angular range.
2. A lighting device according to claim 1, wherein the input element is conical or paraboloid in shape.
- 15 3. A lighting device according to claim 1 or 2, wherein the restricted angular range of the collimated light coupled into the light guide in particular ranges between the boundaries 0° and 40° relative to the average direction of propagation of the light in the light guide.
- 20 4. A lighting device according to claim 1, 2 or 3, wherein said output element is an outwardly curved lens or at least one optical lens adjacent to the output element disposed in such a way that the emitted light beam from the output element is substantially entirely passed through the said at least one optical lens.
- 25 5. A lighting device according to claim 1, 2, or 3, wherein a specular reflecting, preferably adjustable, surface of a mirror element is disposed in a preferred spatial orientation near the output element.

6. A lighting device according to claim 1, 2, 3, 4 or 5, wherein a color filter is arranged on or near the output element.
5. A lighting device according to claim 1, 2, 3, 4 or 5, wherein the lighting device comprises on or near the output element a rotatable colour wheel comprising a number colour filters.
10. A lighting device according to any one of the preceding claims 1 - 7, wherein the diffuse light reflector comprises a diffusely reflective layer arranged on a side of the housing that faces towards the light source.
15. A lighting device according to any one of the preceding claims 1 - 8, wherein the diffuse light reflector comprises at least one light-transmitting element bounding a space at least partially and forming an inner side of the housing, as well as a diffuse reflective powder present inside said space.
20. A lighting device according to claim 9, wherein said powder comprises calcium halophosphate, calcium pyrophosphate, BaSO₄, MgO, YBO₃, TiO₂ or Al₂O₃ particles.
11. A lighting device according to claim 10, wherein the particles have an average diameter ranging between 0.1 and 100 µm, in particular 5 to 20 µm.
25. A lighting device according to claim 10 or 11, wherein said particles are mixed with fine-grained Al₂O₃ particles having an average diameter which ranges between 10 and 50 nm.
30. A lighting device according to claim 12, wherein the amount of fine-grained Al₂O₃ particles having an average diameter ranging between 10 and 50 nm ranges between 0.1 and 5 wt. %, in particular 0.5 to 3 wt. %.
14. A lighting device according to any one of the preceding claims 9 - 13, wherein said powder is a "free-flowing" type powder.

15. A lighting device according to any one of the preceding claims 9- 1
the powder is incapable of absorbing light, at least light having a wavelength in the visible
wavelength range.

5 16. A lighting device according to any one of the preceding claims 9 - 15, wherein
a surface of the light-transmitting element facing towards the light source is optically
roughened.

10 17. A lighting device according claim 16, wherein a surface of the light-
transmitting element facing towards the powder is likewise optically roughened.

15 18. A lighting device according to any one of the preceding claims 9 - 17, wherein
the diffuse light reflector comprises at least two spaced-apart elements forming an
intermediate space between them, in which one element facing towards the light source forms
the light-transmitting element, and in which the diffusely reflective powder is present in said
intermediate space.

20 19. A lighting device according to claim 18, wherein said spacing is greater than
or equal to 0.5 mm, in particular greater than or equal to 1 mm, more in particular greater
than or equal to 2 mm.

25 20. A lighting device according to claim 18 or 19, wherein the diffuse light
reflector comprises at least two concentric, light-transmitting elements, which are in
particular made of glass or quartz.

21. A lighting device according to claim 18 or 19, wherein the diffuse light
reflector comprises at least an outer metallic element facing away from the light source and
an inner glass or quartz glass element facing the light source, said elements mutually being
spaced apart.

30 22. A method for manufacturing a lighting device, in which at least one light
source arranged in a housing is supplied and in which a light guide is arranged on at least one
side of the housing, which light guide includes an input element facing towards the light
source, which during operation of the lighting device functions to receive light radiated from

the light source, as well as an output element facing away from the light source, v
operation of the lighting device functions to emit a light beam being passed through the light
guide, and in which the housing is provided with a diffuse light reflector for the diffuse
reflection of light radiated from the light source into the direction of the input element so as
5 to increase the light output of the lighting device during operation of the lighting device,
characterized in that the input element of the light guide is configured as a collimator so as to
enable a light beam to be coupled into the light guide within a restricted angular range .